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**HYDRO POWER AND ENERGY
PLANNING PROJECT (HPEP)**

Developing Merchant Power Plants

July 2014



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What is a Merchant Power Plant?

- A power plant constructed to operate in the competitive electricity market
- Risks
 - Market risk
 - Construction risk
 - Structural Risk (legal/regulatory, financing)
- Balance Sheet versus Project Financing



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Technology Selection

- Developers normally have a niche:
 - Gas-fired thermal plants
 - Large HPPs
 - R-O-R HPPs
 - Nuclear
 - Coal Fired PPs
 - Wind, solar, biomass, geo-thermal, others



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The Approach

Three Basic Steps

- Due Diligence
- Project Development
- Financing



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Due Diligence

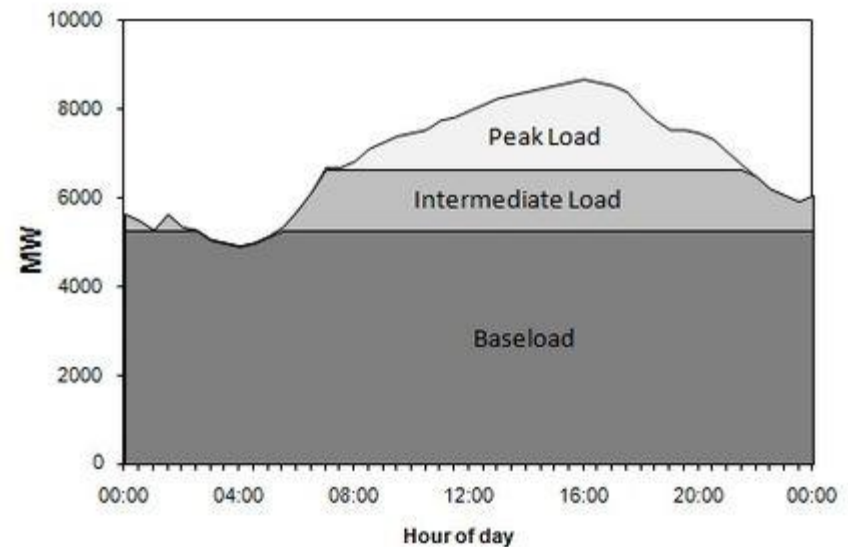


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Which market, which part?

- Energy market
 - Base load
 - Cycling Duty
 - Peak energy
- Capacity Market
- Ancillary Services Market





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Approach to Merchant Plant Development

- Review of various markets
 - **Stability of the government and its legislation**
 - **Status of competition (non-existent, nascent, developing, mature)**
 - **Closeness of market to an existing market (synergies)**
 - **Review the legislative framework**
 - **Review public sentiment toward PP construction**



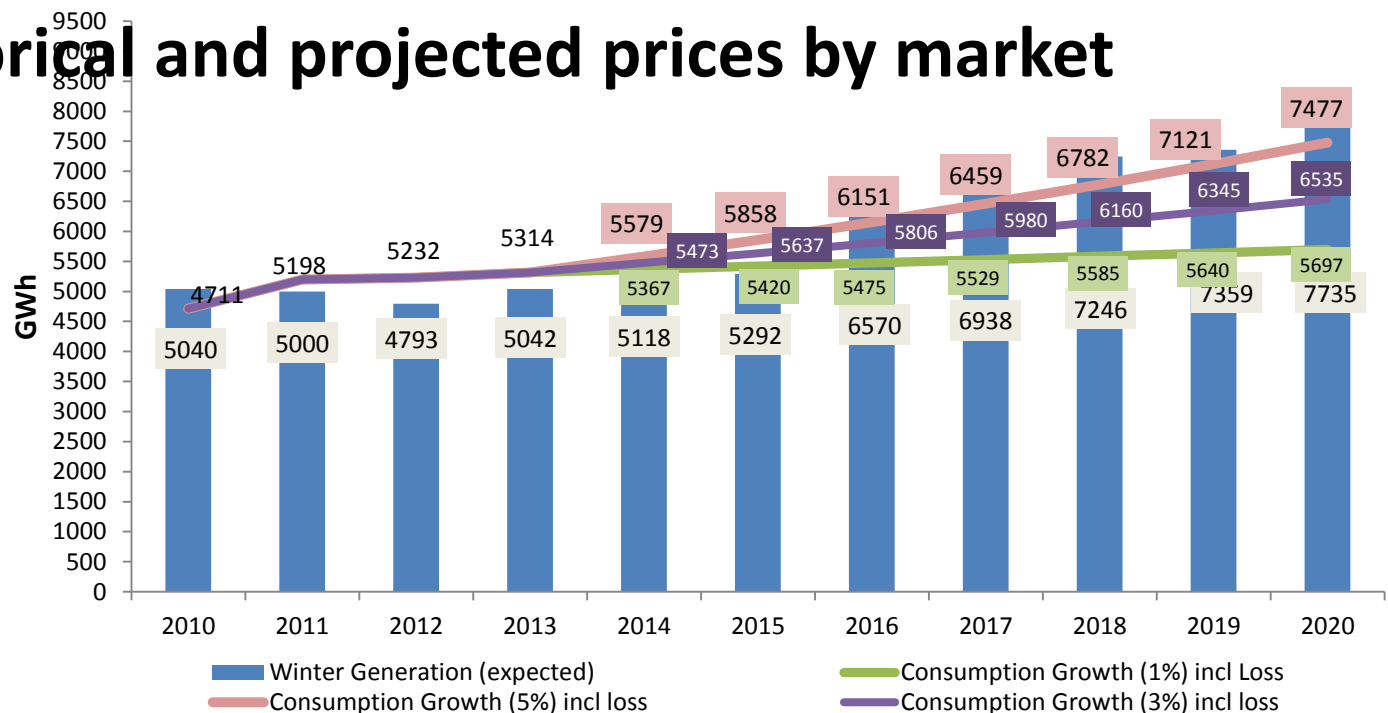


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Approach to Merchant Plant Development

- Review of various markets
 - Historical and projected demand by market
 - Historical and projected prices by market



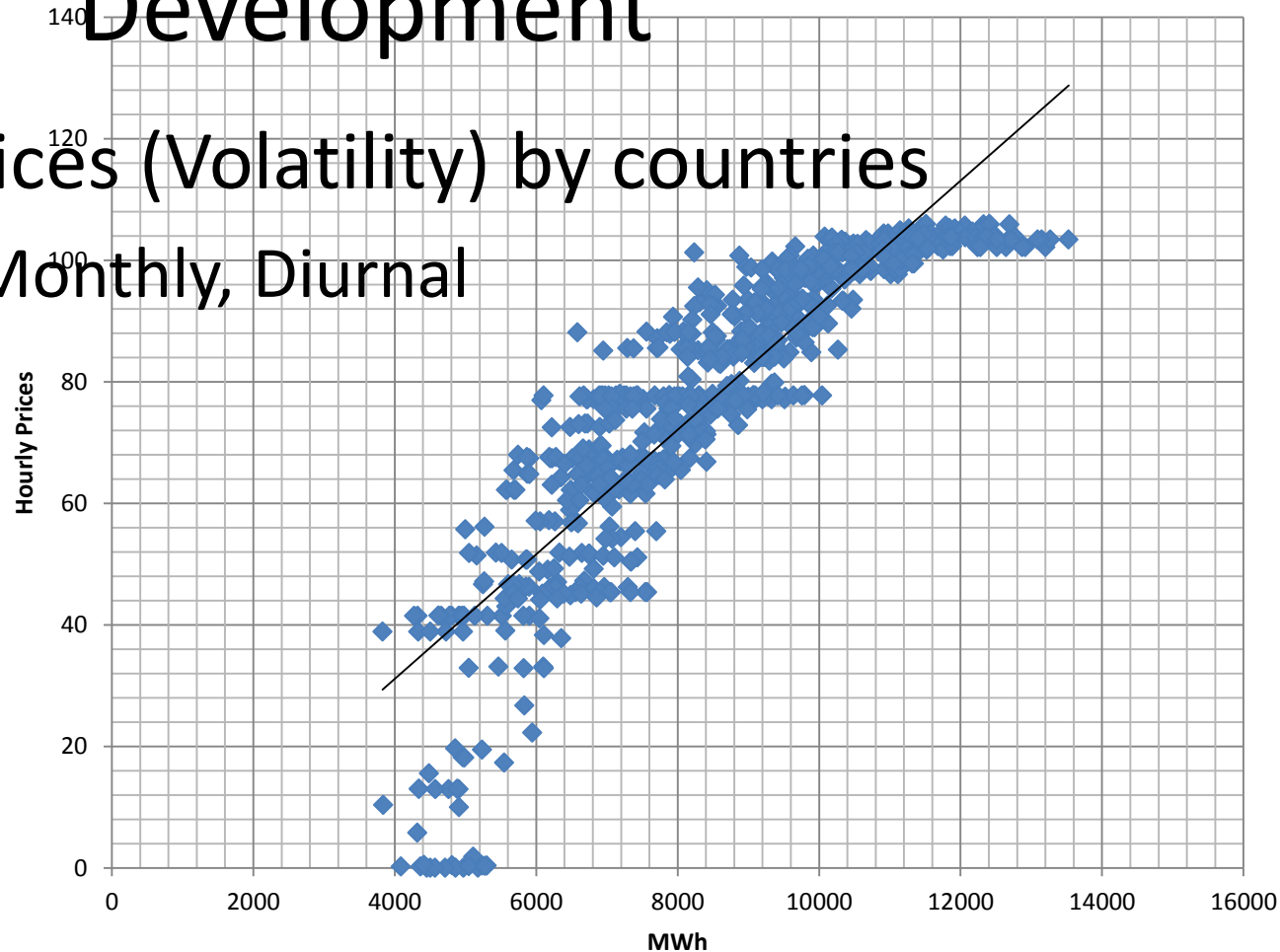


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Approach to Merchant Plant Development

- Compare Prices (Volatility) by countries
 - Seasonal, Monthly, Diurnal



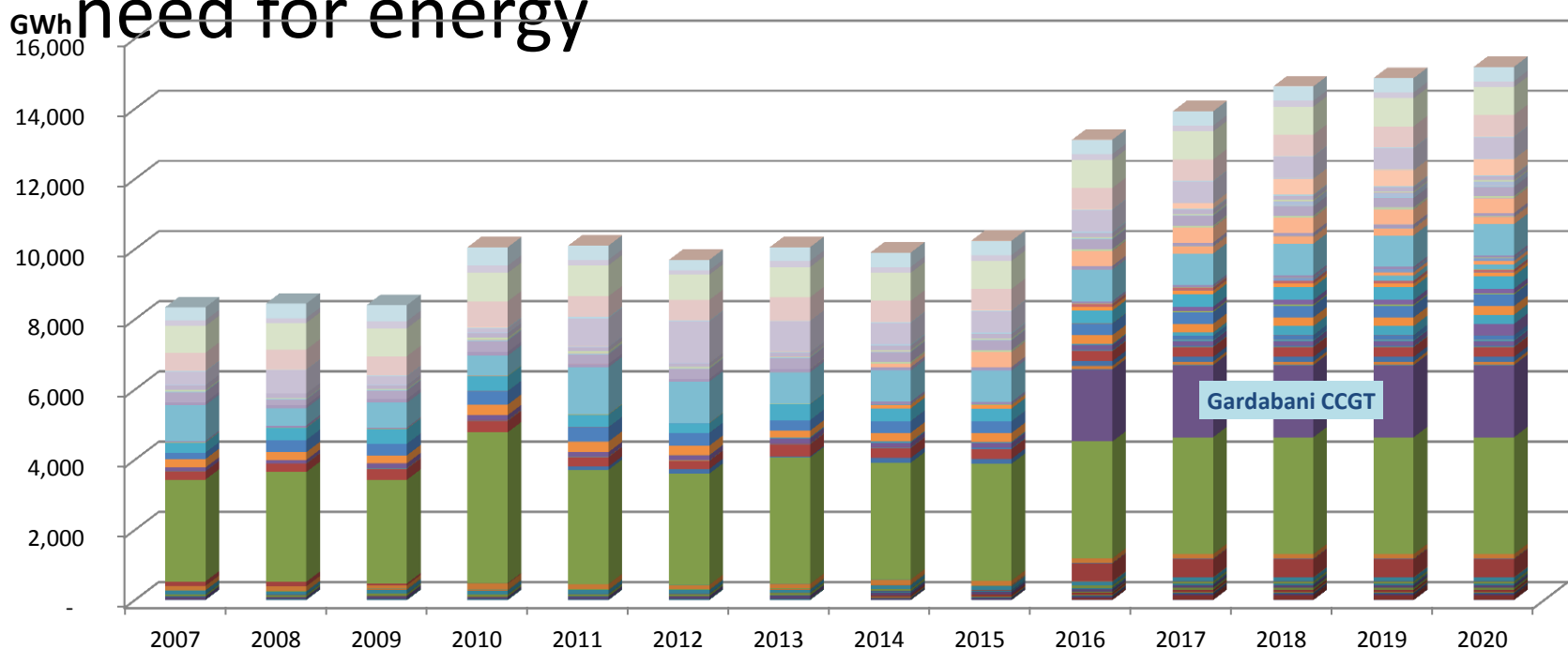


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Approach to Merchant Plant Development

- Analyze competition (artificial intelligence)
- Forecast generation stack, need for capacity, need for energy





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Approach to Merchant Plant Development

- Determine if your technology is a good fit for country/various markets
- Select one or more countries to develop PPs
- Develop feasibility study and all related permits and licenses



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Project Development



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Approach to Merchant Plant Development

- Develop proposed projects
- Develop feasibility study and all related permits and licenses



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Approach to Merchant Plant Development

- Identify risks
- Assess risks for entering the competitive market with proposed project and analyze future scenarios that could create revenue shortfalls
- Develop risk mitigation measures
- If the deal



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Project Financing



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Approach to Merchant Plant Development

- Seek financing on balance sheet and/or project finance basis
- Provide lending institutions the necessary information for them to make insightful decision to finance the project
- Financial Close



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